

## 107.1 Primary Gas Mixtures

These SRMs are for calibrating equipment and apparatus used to measure various components of gas mixtures and atmospheric pollutants. The typical gas mixture is supplied in a DOT 3AL specification aluminum (6061 alloy) cylinder with a nominal pressure exceeding 12.4 mPa that provides the user with approximately 0.73m<sup>3</sup>

A NIST Traceable Reference Material (NTRM) is a reference material produced by a commercial supplier with a well-defined **traceability** to NIST. This traceability is established via criteria and protocols defined by NIST that are tailored to meet the needs of the metrological community to be served. The NTRM concept was established to allow NIST to respond to the increasing needs for high quality reference materials by leveraging its relatively fixed human and financial resources with secondary reference material producers.

The gas NTRM program was established in 1992 in partnership with the U.S. EPA and specialty gas companies as a means for providing end-users with the wide variety of certified gas standards needed to implement the Emissions Trading provision of the 1990 Clean Air Act. Gas NTRMs are produced and distributed by specialty gas companies with NIST oversight of the production and maintenance, and direct involvement in the analysis. NTRMs can be developed for any pollutant, concentration, and balance gas

[Those SRMs that are marked "\\*" are available as NTRMs from commercial suppliers.](#)

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PLEASE NOTE: The tables are presented to facilitate comparisons among a family of materials to help customers select the best SRM for their needs. For specific values and uncertainties, the certificate is the only official source.

SRM	Description	Certified Component	Nominal Amount-of-substance fraction (in $\mu\text{mol/mol}$ )
1674b*	Carbon Dioxide in Nitrogen	CO <sub>2</sub>	7 % mol/mol
1675b*	Carbon Dioxide in Nitrogen	CO <sub>2</sub>	14 % mol/mol
1676	Carbon Dioxide in Air	CO <sub>2</sub>	365
2619a	Carbon Dioxide in Nitrogen	CO <sub>2</sub>	0.5 % mol/mol
2620a	Carbon Dioxide in Nitrogen	CO <sub>2</sub>	1.0 % mol/mol
2621a	Carbon Dioxide in Nitrogen	CO <sub>2</sub>	1.5 % mol/mol
2622a	Carbon Dioxide in Nitrogen	CO <sub>2</sub>	2.0 % mol/mol
2623a	Carbon Dioxide in Nitrogen	CO <sub>2</sub>	2.5 % mol/mol

2624a	Carbon Dioxide in Nitrogen	CO <sub>2</sub>	3.0 % mol/mol
2625a*	Carbon Dioxide in Nitrogen	CO <sub>2</sub>	3.5 % mol/mol
2626a	Carbon Dioxide in Nitrogen	CO <sub>2</sub>	4.0 % mol/mol
2745*	Carbon Dioxide in Nitrogen	CO <sub>2</sub>	16 % mol/mol

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2612a	Carbon Monoxide in Air	CO	10
2613a	Carbon Monoxide in Air	CO	20
2614a	Carbon Monoxide in Air	CO	42

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1677c*	Carbon Monoxide in Nitrogen	CO	10
1678c*	Carbon Monoxide in Nitrogen	CO	50
1679c*	Carbon Monoxide in Nitrogen	CO	100
1680b*	Carbon Monoxide in Nitrogen	CO	500
1681b*	Carbon Monoxide in Nitrogen	CO	1000

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2635a*	Carbon Monoxide in Nitrogen	CO	25
2636a*	Carbon Monoxide in Nitrogen	CO	250
2637a*	Carbon Monoxide in Nitrogen	CO	2500
2638a*	Carbon Monoxide in Nitrogen	CO	5000
2639a	Carbon Monoxide in Nitrogen	CO	1 % mol/mol

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2640a	Carbon Monoxide in Nitrogen	CO	2 % mol/mol
2641a	Carbon Monoxide in Nitrogen	CO	4 % mol/mol
2642a*	Carbon Monoxide in Nitrogen	CO	8 % mol/mol
2740a	Carbon Monoxide in Nitrogen	CO	10 % mol/mol
2741a	Carbon Monoxide in Nitrogen	CO	13 % mol/mol

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1658a	Methane in Air	CH <sub>4</sub>	1
1659a	Methane in Air	CH <sub>4</sub>	10
1660a	Methane-Propane in Air	CH <sub>4</sub> : C <sub>3</sub> H <sub>8</sub>	4:01
		C <sub>3</sub> H <sub>8</sub>	1
2750	Methane in Air	CH <sub>4</sub>	50
2751	Methane in Air	CH <sub>4</sub>	100

1683b*	Nitric Oxide in Nitrogen	NO	50
1684b*	Nitric Oxide in Nitrogen	NO	100
1685b*	Nitric Oxide in Nitrogen	NO	250
1686b*	Nitric Oxide in Nitrogen	NO	500
1687b*	Nitric Oxide in Nitrogen	NO	1000
2627a	Nitric Oxide in Nitrogen	NO	5
2628a	Nitric Oxide in Nitrogen	NO	10
2629a*	Nitric Oxide in Nitrogen	NO	20
2630*	Nitric Oxide in Nitrogen	NO	1500
2631a*	Nitric Oxide in Nitrogen	NO	3000
2735	Nitric Oxide in Nitrogen	NO	800
2736a	Nitric Oxide in Nitrogen	NO	2000
2737	Nitric Oxide in Nitrogen	NO	500
2738	Nitric Oxide in Nitrogen	NO	1000
2660a*	Oxides of Nitrogen in Air	NO <sub>x</sub>	100
2657a*	Oxygen in Nitrogen	O <sub>2</sub>	2 % mol/mol
2658a*	Oxygen in Nitrogen	O <sub>2</sub>	10 % mol/mol
2659a*	Oxygen in Nitrogen	O <sub>2</sub>	21 % mol/mol
1665b	Propane in Air	C <sub>3</sub> H <sub>8</sub>	3
1666b	Propane in Air	C <sub>3</sub> H <sub>8</sub>	10
1667b	Propane in Air	C <sub>3</sub> H <sub>8</sub>	50
1668b*	Propane in Air	C <sub>3</sub> H <sub>8</sub>	100
1669b	Propane in Air	C <sub>3</sub> H <sub>8</sub>	500
2764	Propane in Air	C <sub>3</sub> H <sub>8</sub>	0.25
2644a	Propane in Nitrogen	C <sub>3</sub> H <sub>8</sub>	250
2646a	Propane in Nitrogen	C <sub>3</sub> H <sub>8</sub>	1000
2647a	Propane in Nitrogen	C <sub>3</sub> H <sub>8</sub>	2500
2648a	Propane in Nitrogen	C <sub>3</sub> H <sub>8</sub>	5000

1661a*	Sulfur Dioxide in Nitrogen	SO <sub>2</sub>	500
1662a*	Sulfur Dioxide in Nitrogen	SO <sub>2</sub>	1000
1663a*	Sulfur Dioxide in Nitrogen	SO <sub>2</sub>	1500
1664a*	Sulfur Dioxide in Nitrogen	SO <sub>2</sub>	2500
1693a*	Sulfur Dioxide in Nitrogen	SO <sub>2</sub>	50
1694a*	Sulfur Dioxide in Nitrogen	SO <sub>2</sub>	100
1696a*	Sulfur Dioxide in Nitrogen	SO <sub>2</sub>	3500
1800	Ambient Non-Methane Organics in Nitrogen	(Fifteen components in large cylinder)	5 nmol/mol
1800a	Ambient Non-Methane Organics in Nitrogen	(Fifteen components in small cylinder)	5 nmol/mol
1800b	Ambient Non-Methane Organics in Nitrogen	(Eighteen components in small cylinder)	5 nmol/mol
1804a	Ambient Non-Methane Organics in Nitrogen	(Nineteen components)	5 nmol/mol
1804c	Ambient Non-Methane Organics in Organics	(Thirity components)	5 nmol/mol
2730	Hydrogen Sulfide in Nitrogen	H <sub>2</sub> S	5
2731	Hydrogen Sulfide in Nitrogen	H <sub>2</sub> S	20